

Chapter 3

Managing Tuna Fisheries

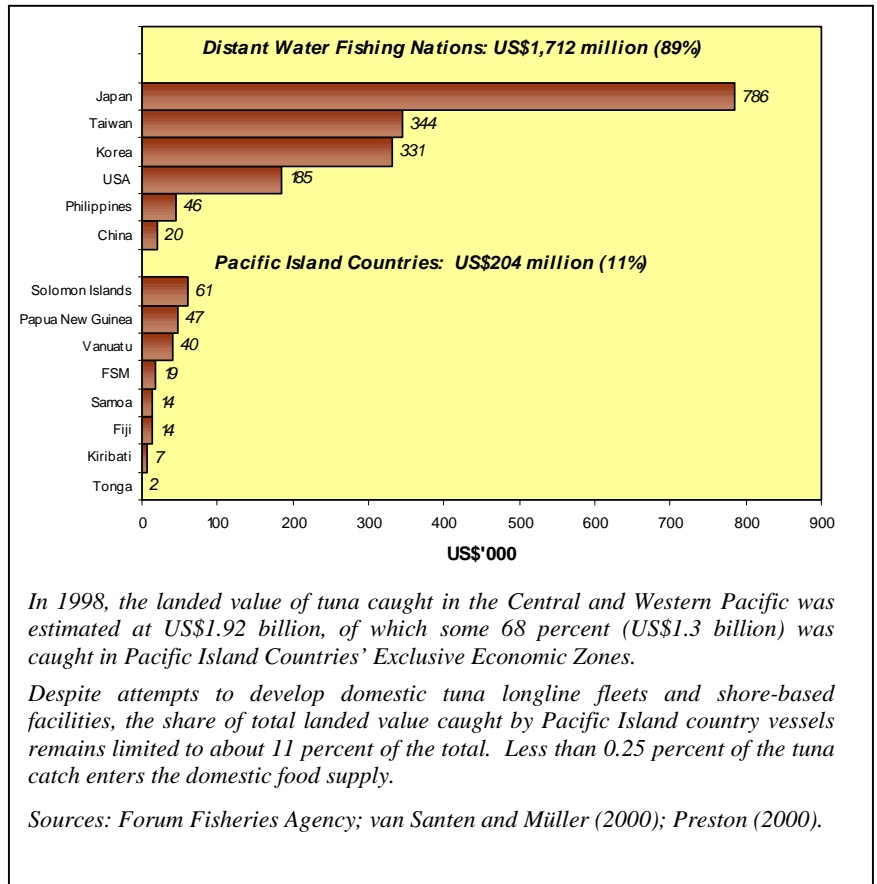
A. Economic Importance of Tuna Fisheries⁵

The ocean surrounding the Pacific Islands is the most important tuna fishing ground in the world. It provides a third of the world's tuna catch and 40–50 percent of the total supply to tuna canneries. Annual production during the 1990s averaged nearly 1 million metric tons,⁶ with a landed value close to US\$2 billion at current times (SPC 2000; FFA 2000).

Despite this value, the share captured by Pacific Island vessels remains modest. Most of the region's tuna is caught by distant water fishing nations, with Japan, the Republic of Korea, Taiwan (China), and the United States the most important players. Catches by Pacific Island country fleets represented only about 11 percent of the total landed value in 1998 (figure 8).

Distant water fishing nations pay license fees to Pacific Island countries for the right to fish in their EEZs. In 1997/98 these fees amounted to more than US\$54 million. Kiribati, the Federal States of Micronesia, Papua New Guinea, the Marshall Islands, and the Solomon Islands were the top

Figure 8. Value of Pacific Island Tuna Catch by Fishing Nation (1998)



In 1998, the landed value of tuna caught in the Central and Western Pacific was estimated at US\$1.92 billion, of which some 68 percent (US\$1.3 billion) was caught in Pacific Island Countries' Exclusive Economic Zones.

Despite attempts to develop domestic tuna longline fleets and shore-based facilities, the share of total landed value caught by Pacific Island country vessels remains limited to about 11 percent of the total. Less than 0.25 percent of the tuna catch enters the domestic food supply.

Sources: Forum Fisheries Agency; van Santen and Müller (2000); Preston (2000).

beneficiaries. License fees represent a sizable portion of total public revenue in Micronesian countries, accounting in 1998 for 61 percent of the total revenues in Kiribati and 29 percent of revenues in the Federal States of Micronesia (Kiribati and FSM government statistics 2000).

⁵ This section is based on background reports by Van Santen and Müller (2000), Preston (2000), and Freestone and Müller (2000). The authors are also grateful to Johnny Kirata and Bob Gillett for advice and background data.

⁶ This figure includes only the Secretariat of Pacific Community statistical area. In 1998 tuna statistics were changed to include the wider Central and Western Pacific, where a total catch of 1.8 million metric tons was recorded (about half of the world's tuna supply).

Pacific Island countries have long sought to increase their benefits from tuna resources, with some success. Starting with the creation of the Forum Fisheries Agency in 1979, countries in the region have collaborated closely in regional tuna management. This collaboration has paid off. Regional initiatives such as the vessel

monitoring system, the regional register system, and joint research costing US\$3.5 million a year would have cost close to US\$21 million if they had been developed by individual countries.

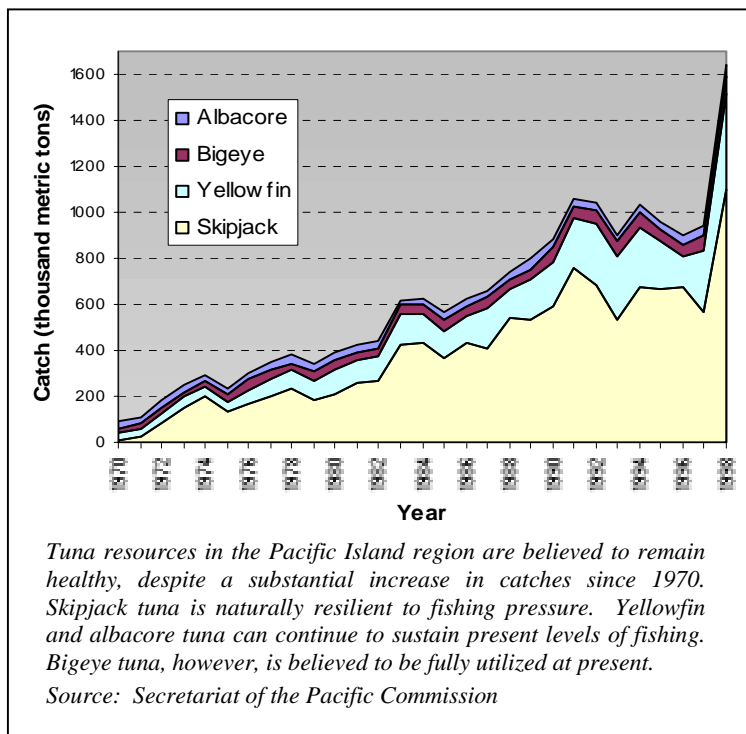
Regional collaboration has also strengthened Pacific Island countries' leverage with distant water fishing nations. The regional register, for example, prevents vessels with unpaid fines or outstanding offences -- vessels who lack "good standing" status -- from operating in the waters of any Forum Fisheries Agency country. Foreign vessels have been known to pay fines of US\$1 million rather than lose their good standing in the region (Moore 1987).

Several private sector investments in domestic tuna fisheries have also been successful. They include the establishment of transshipment bases in the Federal States of Micronesia and Fiji and the expansion of tuna longline in Samoa and Fiji. Locally based tuna fleets now contribute an estimated US\$80 million a year in home port expenditures (Gillett 1997).

Despite these successes, many Pacific Island countries have suffered crippling financial losses from their public investments in tuna fisheries (ADB 1997; FFA and ADB 1998; Cartwright 1999). Notwithstanding early promises of high employment and export value, most public ventures have suffered from poor management, declining tuna prices, and competition from countries with lower operating costs. In all, an estimated US\$200–\$300 million in past investments has failed to yield minimum economic returns. This means that for the region as a whole, the revenues from access fees have largely been lost through failed local investments.

In 1987 Pacific Island countries collaborated in negotiating the U.S. Multilateral Treaty, which allows U.S. purse seiners' access to waters of Forum Fisheries Agency members. The treaty, which was renewed in 1997, provides for a fixed annual fee of about US\$18 million. Fifteen

Figure 9. Tuna Catches in the Pacific Island Region, 1970-88



percent of this fee is distributed equally among the 16 members of the Forum Fisheries Agency; 85 percent is paid to states in whose EEZs the fish is caught. Up to 50 percent of this value is paid through aid (Duncan and others 1999).

The U.S. treaty is the only multilateral access agreement in the region. All other agreements have been negotiated bilaterally between coastal states and individual distant water fishing nations. Common reasons offered by Pacific Island countries for this preference include fears of losing sovereign rights and bilateral aid, and reluctance to subsidize less well-endowed countries. As the analysis will show, however, multilateral agreements could be more effective than bilateral agreements in ensuring that Pacific Island countries derive optimal benefits from tuna exploitation.

B. Trends Affecting Tuna Tuna Fisheries

Unlike most tuna stocks in the world, Pacific Island tuna remain healthy (figure 9). The exception is bigeye tuna—found primarily in the high seas of the Pacific—which is considered

fully exploited. Conditions could change in the future, however, and Pacific Island countries have recognized the need to maintain the stocks in good health. If future climate change scenarios materialize, for example, the region could experience more permanent El Niño conditions and a decline in primary productivity in the central and eastern Pacific (Lehodey 1999). This would likely decrease the natural abundance of bigeye and adult yellowfin tuna and could result in unsustainable fishing pressure from longline fleets (see Volume IV, Chapter 5).

C. Key Challenges and Opportunities: the Future Regional Management Regime

The region is on the verge of a historic decision on tuna fisheries. Since 1997 Pacific Island countries and distant water fishing nations have been negotiating a new regional convention to improve the management and conservation of tuna stocks, in accordance with the United Nations Fish Stocks Agreement.

The Multilateral High-Level Conference (MHLC) process, which has just been completed, is expected to result in a new regional convention and commission for managing tuna stocks in the Western and Central Pacific. The commission would allocate catch quotas and implement new arrangements for vessel surveillance in the convention area. In contrast with current arrangements under the Forum Fisheries Commission, distant water fishing nations would also be members of the commission. Pacific Island countries, however, would retain the right to manage tuna resources in their respective EEZs.

The ongoing discussions on the convention, however, have postponed resolution of two major issues: financial contributions by member states, and allocation of total allowable catch, which was left to the commission to decide. It is urgent that Pacific Island countries agree on a common position on these issues which maximizes their future benefits under the new regional management convention.

D. Working Together or Apart: A Strategy for Tuna Management

The strategy outlined here examines how coastal states could increase the benefits from the use of their EEZs under the future tuna management regime. In essence, Pacific Island countries should aim to:

- Minimize their financial burden in future management arrangements.
- Maximize their benefits from the future allocation of total allowable catch.
- Negotiate effectively with distant water fishing nations for access to Pacific Island countries' EEZs.

Minimizing the Financial Burden

Historically, the costs of tuna management in the Pacific Island region have been borne by four key players:

- Distant water fishing nation vessel owners, through access fees and by bearing part of the costs of surveillance and on-board observers.
- Distant water fishing governments, through a share of access fees.
- Donor agencies, through direct aid to Pacific Island countries or to regional organizations such as the Forum Fisheries Agency and the Secretariat of the Pacific Community.
- Pacific Island countries, through direct payments for some of the administration and surveillance costs, and through indirect payments (by a reduction of access fees).

The new management regime is expected to either create new arrangements for vessel monitoring, control, and surveillance, or expand the existing regional systems. Even though Pacific Island countries would retain the right to manage tuna resources in their EEZs, as tuna migrate across EEZs and high sea areas, their management would have to be standardized across the convention area, thus entailing additional obligations for coastal states. New management requirements might include an

Table 6. Estimated Present and Projected Future Costs of Regional Fisheries Management and Administration (thousands of US\$)

Cost	Current costs of ongoing activities funded by			Estimated costs of future activities with new convention funded by		
	Distant water fishing nations	Donors (aid)	Pacific Island countries	Distant water fishing nations	Donors (aid)	Pacific Island countries
<i>Investment costs</i>						
Installation of vessel monitoring system	5,000	—	—	6,000 ^a	—	—
Surface surveillance investment costs	—	120,000	—	—	—	—
Preparation for MHLC	750	1,500	200	—	—	—
Finalizing MHLC and commission	750	1,500	200	—	—	—
Updating equipment	—	500	500	—	1,000	1,000
Total investment costs	6,500	123,500	900	6,000^b	1,000^b	1,000^b
<i>Operating costs</i>						
Regional monitoring, control and surveillance	1,600	8,250	4,370	5,220	8,250	4,370
Regional and national tuna research	—	1,800	500	1,700	1,800	500
Data collection	400	40	600	1,000	40	1,000
Legal review and update	—	50	—	—	300	400
Commission overhead	—	—	—	900	—	850
Fisheries administration	—	1,000	1,500	500	600	1,600
Total Operating Costs	2,000	10,190	6,470	9,350	10,990	8,720

— Not applicable.

Note: Future costs include requirements of new convention in FFA area and in the high seas. For detailed assumptions, see Annex B. Costs of negotiating future agreements with distant water fishing nations are not included in the table.

a. US\$8 million if a new vessel monitoring system is adopted.

Source: van Santen and Müller (2000).

effective legal system; vessel observers; regular reporting; improved research; and the strengthening of institutional capacity.

The future commission is expected to have a fund, based on voluntary contributions from members of the convention and aid organizations, to reduce the financial burden on Pacific Island countries. The size of the fund has yet to be determined, but the proposed budget for the first year of the commission—US\$100,000—appears to be only a fraction of the future management costs (table 6).

Overall, the new regional management regime is likely to entail substantial incremental costs for Pacific Island countries, on the order of US\$2 million (in additional investment costs)⁷ and

US\$3 million (in annual operating costs), including costs likely to be funded through aid. Distant water fishing nations are likely to shoulder additional investment costs of US\$6 million and annual operational costs of US\$7 million.

The costs of the convention to Pacific Island countries will depend largely on the amount of foreign aid available. Currently, some 55 percent of the annual operating expenditures of tuna management systems are covered by external players, mostly donors. The estimates in table 6 assume this assistance would continue. However, the willingness of aid donors to maintain their support for existing tuna management systems will have a substantial impact on the projected expenditures of Pacific Island countries.

If aid donors shifted their funding from the existing vessel monitoring system (which is

⁷ The US\$124,400 spent on past investments is considered a sunk cost.

controlled by Pacific Island countries) to a new system supported by the commission (which would be controlled by both Pacific Island countries and distant water fishing nations), the Pacific Island countries could lose their ability to independently monitor vessel operations in their EEZs. A new vessel monitoring system would also require an additional investment of about US\$2 million.

To avoid weakening independent monitoring in their EEZs and help curb future costs, Pacific Island countries should collaborate closely to:

- *Retain existing monitoring systems.* Pacific Island countries should seek to use and expand existing systems, such as the FFA-operated Vessel Monitoring System, the Air and Maritime Surveillance and the Regional Register. To the extent possible, the future high seas observer program should be combined with the existing regional observer program.
- *Move toward a user-pay system.* Ideally, foreign fleets should pay for most of the costs of tuna management—as currently practiced in a number of fisheries around the world. A user-pay system would also avoid the dependency of Pacific Island countries on donor aid and on their own limited budgets.
- *Avoid voluntary contributions* to the future commission fund. Voluntary donations tend to be volatile and decline over time. Given the importance of donor support, Pacific Island countries should carefully reexamine the voluntary nature of the fund and its future size. A specific contribution to the fund as a regular part of the commission’s budget could be considered.
- *Involve the private sector.* To save costs, Pacific Island countries should examine which management activities might be carried out more effectively by the private sector (the observer program, for example).
- *Encourage distant water fishing nations to effectively monitor their own fleets.* Encouraging distant water fishing nations to

monitor their own fleets would reduce the costs of some compliance requirements, such as port transshipment and EEZ entry and exit reporting.

- *Keep independent research and collection of economic data.* Future commission members should agree on a broad regional research program that includes collection of economic and vessel operational data. To preserve its independence, the research program should be executed by the Secretariat of the Pacific Community (SPC) in cooperation with national agencies.

Optimizing the Allocation of Total Allowable Catch

The future commission is expected to determine the total allowable catch (TACs) for tuna fisheries based on principles of biological sustainability (MHLC 1999). The commission is also expected to develop criteria for the allocation of the TAC among member countries.

The allocation of the TAC will inevitably affect the “ownership” of tuna resources. Since the membership of distant water fishing nations in the new commission will confer them collective power over the TAC negotiations, Pacific Island countries need to carefully review the advantages and disadvantages of the possible alternatives.

Among the many alternatives for TAC allocation, two appear most promising:

- The TAC could be allocated to individual distant water fishing nations and individual Pacific Island countries through a negotiated formula based on tuna concentrations in the EEZ and current catches from the high seas.
- The TAC could be allocated to distant water fishing nations (as a group or individually) and to Pacific Island countries as a group. Each of the two groups would receive a negotiated share of the total TAC, possibly reflecting tuna concentrations in the EEZs and high seas. Pacific Island countries could then decide internally how to allocate their share of the TAC.

The first option carries considerable risks. It would tie individual Pacific Island countries to a specific quota regardless of the actual distribution of resources in their EEZ. Moreover, without close and sustained cooperation to create a pooled TAC, the potential leverage that Pacific Island countries' would have in negotiating access fees with distant water fishing nations could be substantially reduced. This alternative also creates strong incentives for Pacific Island countries to discontinue their regional cooperation.

The second option appears the most promising. It would broaden and strengthen Pacific Island countries' power to negotiate access fees, because they could opt to negotiate with distant water fishing nations individually, as a group, or by auctioning the quota to individual vessel owners. The only drawback of this option is that it may reduce Pacific Island countries' chances of capturing benefits from the high seas: distant water fishing nations may be able to argue that since Pacific Island countries receive a substantial share of the total allowable catch for surface tuna—as surface tuna are found primarily in their EEZs—distant water fishing nations should receive most of the TAC for deep swimming tuna found in the high seas.

Ideally, Pacific Island countries should argue in favor of the second option prior to the entering in force of the convention. It would be more difficult to reach agreement on this option once the convention is in effect.

Negotiating Collectively with Distant Water Fishing Fleets

Pacific Island countries are individually in a weak position to benefit from tuna fisheries. Tuna migrate in and out of EEZs, and are caught primarily by foreign fleets. At the same time, collection of access fees offers the greatest potential for future revenues. How can Pacific Island countries optimize their benefits from access agreements with foreign fleets?

Many argue that prevailing bilateral license fee agreements benefit distant water fishing nations. But do they benefit the coastal states? The

diversity of development objectives and resource endowments among coastal states should not overshadow the fact that Pacific Island countries stand a better chance to benefit from their tuna resources by acting as a group than by acting individually (box 3):

- *Size counts.* Tuna resources negotiated by individual countries are much more modest than they would be if the Pacific Island countries negotiated as a group.
- *Negotiating as a group limits the alternatives open to distant water fishing nations.* By negotiating as a group, Pacific Island countries can reduce their individual negotiating weaknesses and prevent distant water fishing nations from negotiating only with countries offering the most favorable conditions.
- *Net benefits are more important than gross benefits.* Even if the gross benefits of bilateral agreements appear to be greater, the costs to individual Pacific Island countries of monitoring such agreements are likely to be higher than under a multilateral agreement, where costs can be shared among coastal states.
- *A group of countries may be able to afford better negotiators.* As a group, Pacific Island countries would be able to afford top negotiators to argue their case.

Several Pacific Island countries have been reluctant to enter into multilateral agreements, with valid reasons. They feel that multilateral agreements compromise their sovereign rights, or that achieving consensus among Pacific Island countries requires too much time and effort and may lead to significant deviation from national positions. Pacific Island countries with more abundant tuna resources may also resent the fixed share that the U.S. Multilateral Treaty provides to less well-endowed countries. Finally, individual countries may fear that multilateral negotiations could result in a reduction of bilateral aid, a major source of revenue for Pacific Island fisheries divisions.

Box 3. The Benefits of Cooperation, the Costs of Going Alone

The importance of cooperation among Pacific Island countries can be illustrated by a simple hypothetical example. Suppose there are 10 coastal states, 5 of which have extensive EEZs. Tuna aggregate seasonally in these countries but only occasionally in the other five countries. Annual catches fluctuate widely in each country. Two industrial countries want to fish in the EEZ of these coastal states. What would the optimal negotiating strategy be for both parties?

Negotiating Strategy for Industrial Countries

The lowest-cost, lowest-risk strategy for the industrial countries is to negotiate with each individual country and offer low access fees or in-kind aid. If a country rejects the initial offer, efforts could be made to persuade individual decisionmakers in that country. If these efforts fail, the industrial country would approach the remaining four countries with large EEZs. If none accepts the initial offer, the industrial country could offer higher rewards, targeting countries with the largest EEZs and most convenient locations.

It is in the industrial country's interest that no coastal state cooperate with others and that the terms of the negotiation remain secret. To prevent collusion among coastal states, the industrial country could indicate a potential reduction in aid or trade policy restrictions. Since no country knows the position of the others and all realize the industrial country can go elsewhere, they are likely to accept the low offer. Tempting the other industrial country to make a counteroffer may not succeed, as the industrial countries may well exchange key information about each other's positions once they realize they are being "played against one another."

Negotiating Strategy for Coastal States

The best strategy for the coastal states would be to minimize their key weakness: the possibility that the industrial countries will shop around and the fact that they themselves offer access to a fluctuating, migrating resource. This can be achieved by cooperating and negotiating as a group. Such cooperation has other advantages as well: it allows for advance preparation of a joint negotiating strategy, and it allows for the sharing of information among coastal states. Projected net benefits to each coastal state from joint negotiation could be set higher than what could be realistically obtained through bilateral negotiations. Negotiating as a group would change the coastal states' position from that of a small seller of access to a modest, fluctuating resource to a single supplier of a large and stable resource—that is, they would move from being "price takers" to "price setters".

Coastal states may be placed under pressure to reduce their cooperation, but they would have several options with which to counter that pressure. They could offer access to their entire tuna resource to third parties, use geopolitical or international considerations to their benefit, or seek public support for their cause through the media.

Source: van Santen and Müller (2000).

These arguments are valid, but perhaps not overriding. The risk of modifying sensitive national positions could be reduced by using professional negotiators. With the advent of global communications, the time and costs of preparing for multilateral negotiations are also less daunting than in the past. And the costs of supporting less well-endowed Pacific Island countries may be relatively small: in the U.S. Multilateral Treaty, they represent 4 percent of a total revenue of US\$18 million. Should a particular Pacific Island country lose out as a result of a multilateral agreement, other countries could agree to compensate it by providing it with a larger share of the access fees.

The impact of aid linked to access agreements can be questionable. Offers of aid reduce the transparency of the agreement, and they may allow distant water fishing nations to subsidize national fleets by paying part of the costs of access from their aid budget. Aid could thus

artificially increase the competitiveness of foreign vessels. Overall, the record suggests that aid and in-kind payments may have provided substantially fewer benefits to the Pacific Islands than their total budgets indicate.

Joint Negotiating Strategies for Surface Tuna.

The majority of surface tuna caught by purse seiners (skipjack and young yellowfin tuna) are found inside the EEZs of Pacific Island countries: distant water fishing nation fleets are unlikely to operate profitably without access to Pacific Island countries' waters. Coastal states thus have considerable leverage over multilateral negotiations for purse seine access.

In developing their negotiating strategies, Pacific Island countries should realistically assess the benefits of bilateral agreements, and the potential to exceed these benefits through a joint multilateral approach (where no single coastal state would lose out). An umbrella contract with distant water fishing nations, or direct negotiations with private companies—

including new potential operators—could be considered.

Pacific Island countries might also explore the option of reducing the total purse seine fishing effort as a way to increase the profitability of the fleet, and thus their potential to derive higher access fees in the future (box 4).

Joint Negotiating Strategies for Deep-Swimming Tuna. While Pacific Island countries have considerable leverage in surface tuna negotiations, their position is weaker for albacore tuna, which distant water fishing nations can feasibly exploit in the high seas without access to EEZ waters. However, tuna longlining for other species, such as adult yellowfin, requires access to the EEZ of one or two countries with abundant resources to

guarantee viable financial returns. With the Japanese sashimi market expanding rapidly, global demand for deep-swimming tuna is also expected to increase.

A different negotiating strategy could therefore be pursued for longliners: countries with abundant resources — the Federal States of Micronesia, Kiribati, the Marshall Islands, Papua New Guinea, and the Solomon Islands— could offer access to their entire combined EEZs, thus increasing the potential profitability and interest of individual distant water fishing nations in negotiating a joint agreement. Coastal states could also use the rapidly expanding momentum in the longline industry to offer inducements to new operators, thereby increasing the number of alternative parties willing to negotiate with them.

Box 4. Economic Management of Tuna Fisheries?

Although regulation of fisheries is generally used to prevent biological overexploitation, the principle can also be used for economic management. To obtain an optimal economic exploitation, investments in fishing should be such that the industry as a whole maximizes its net benefits.

Tuna in the Pacific are not overexploited in biological terms. However, there is some evidence that for surface tuna such as skipjack, there is excess capacity in both canneries and vessels. Profits in the canned tuna industry are under pressure worldwide as a result of the large expansion in catches and canned tuna production, industry consolidation, protected market blocks in Europe and the United States (which stimulate overinvestment), improvements in technology, and expansion of fishing grounds to the Western Pacific and Indian Oceans. As a result, average raw material prices have declined by some 50 percent in real terms over the past two decades.

Tuna fisheries are notoriously difficult to regulate because of the high natural fluctuation in catches and the long-term nature of investments. However, a practical rule of thumb may apply. In the tuna canning industry, transfer prices for raw materials between fishing vessels and canneries determine both vessel and cannery profitability. When tuna are highly abundant, transfer prices are usually very low, cannery operations become more profitable, and vessel operations become less profitable. When tuna are less abundant, transfer prices go up, and catching becomes more profitable. For Pacific Island countries, then, controlling the global production of canned tuna supply is likely to have financial advantages.

Pacific Island countries should consider reducing the purse seine fishing effort in the Western and Central Pacific as a way to improve the profitability of tuna fisheries. While the demand for canned tuna is linked to substitutes such as chicken and pork, transfer prices for raw tuna to canneries have historically shown major swings with changes in supply (as there are no substitutes for the raw material). Given Pacific Island countries' share of the market—some 40–50 percent of the raw material for canneries—a reduction in fishing effort would almost certainly result in an increase in world transfer prices of raw materials. This would enhance the profitability of fishing vessels, increase the potential for higher access fees, and put pressure on the canning industry to restructure and reduce its excess capacity. A recent bioeconomic study (FFA 1999) suggests that a reduction in effort might indeed increase the profits of the fishing fleet in absolute terms.

An immediate reduction in the purse seine fishing fleet could face serious political difficulties. But a gradual reduction could be beneficial. As a long-term negotiating strategy, Pacific Island countries could explore the feasibility of reducing the level of purse seine operations in their EEZs while linking access by new operators to a simultaneous reduction of their fleet in the Indian Ocean. The Palau Agreement—which places a ceiling on the number of purse seiners licensed in the region—provides an effective tool for this approach.

Source: van Santen and Müller (2000).

Pacific Island countries are on the verge of making key decisions that will influence the benefits they derive from tuna resources for years to come. Close cooperation among coastal states is key to their ability to optimize benefits and reduce the future costs of tuna management. Pacific Island

countries need to urgently develop a common position to maintain independent monitoring in their EEZs, curb management costs, and expand their ability to negotiate optimal access fees with distant water fishing nations.

